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EXAMINER
ELMORE, R

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ART UNIT	PAPER NUMBER
2312	# 8

DATE MAILED 10/30/91

COMMISSIONER OF PATENTS AND TRADEMARKS

☒ This application has been examined ☒ Responsive to communication filed on Aug 16, 1991 ☐ This action is made final.

A shortened statutory period for response to this action is set to expire 3 (THREE) month(s), 0 days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- | | |
|---|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited by Examiner, PTO-892. | 2. <input type="checkbox"/> Notice re Patent Drawing, PTO-948. |
| 3. <input checked="" type="checkbox"/> Notice of Art Cited by Applicant, PTO-1449. | 4. <input type="checkbox"/> Notice of Informal Patent Application, Form PTO-152 |
| 5. <input type="checkbox"/> Information on How to Effect Drawing Changes, PTO-1474. | 6. <input type="checkbox"/> |

Part II SUMMARY OF ACTION

1. ☒ Claims 1-62 are pending in the application.
Of the above, claims 1-29 and 56-62 are withdrawn from consideration.
2. ☐ Claims _____ have been cancelled.
3. ☐ Claims _____ are allowed.
4. ☒ Claims 30-55 are rejected.
5. ☐ Claims _____ are objected to.
6. ☐ Claims _____ are subject to restriction or election requirement.
7. ☒ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. ☐ Formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable; ☐ not acceptable (see explanation or Notice re Patent Drawing, PTO-948).
10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on _____, has (have) been ☐ approved by the examiner; ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed _____, has been ☐ approved; ☐ disapproved (see explanation).
12. ☐ Acknowledgement is made of the claim for priority under U.S.C. 119. The certified copy has ☐ been received ☐ not been received ☐ been filed in parent application, serial no. _____; filed on _____.
13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other

EXAMINER'S ACTION

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1. Claims 30-55 are presented for examination.
2. Applicant's election without traverse of claims 30-55 in Paper No. 7 is acknowledged.
3. Claims 1-29 and 56-62 are withdrawn from further consideration by the examiner, 37 C.F.R. § 1.142(b) as being drawn to a nonelected invention. Election was made without traverse in Paper No. 7.
4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The current title is imprecise.

5. The drawings are objected to because:

(a) Correspondence between Figures 3A and 3B with the previous drawings is incorrect, if the controller shown in 3A and 3B is the controller shown in Figures 1 and 2 as element 31, the reference numeral 31 should be used in Figures 3A and 3b, if it is a different controller how does it relate to the invention as depicted in Figures 1 and 2. Also, it is unclear how much of Figure 3A is designated as element 220, are the sectors part of 220?

(b) Are Figures 6 and 7 a further depiction of the controller 31 shown in Figures 1 and 2? If not, what does the reference numeral 31 indicate?

Correction is required.

Applicant is reminded of the provisions of MPEP 608.02(q)

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and 608.02(r) regarding a separate draftsman's letter.

6. Claims 30-55 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims are indefinite because:

(a) The clear cooperative structural interrelationship among claimed elements (i.e., a cache memory, means responsive to a system write, means for identifying each file, means for determining the time each file was last written and the means for moving a data file, microprocessor system, random access memory RAM, tag memory) is unstated and uncertain. Claims 30, 35, 36, 41, 42, 45, 46, 49, 50 and 55 are therefore incomplete (See MPEP 706.03(f)).

(b) does the system comprise the various means or does the flash eeprom memory comprise the various means -- claims 30, 36, 42, 46 and 50;

(c) what means or element is responsible for the write request -- claim 30, lines 7-8, claim 36, lines 7-8, claim 42, lines 7-8, claim 46, lines 7-8 and claim 50, lines 9-10;

(d) what determines a power loss is impending -- claims 31, 37, 43 and 51;

(e) is the flash eeprom memory part of the controller circuit chip, the structure given in claims 34, 40, 48 and 54 is very vague;

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Claims 32-33, 38-39, 44, 47, and 52-53 are rejected as including all the deficiencies of independent claims rejected above.

7. The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. § 103, the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 C.F.R. § 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of potential 35 U.S.C. § 102(f) or (g) prior art under 35 U.S.C. § 103.

9. Claims 30-55 are rejected under 35 U.S.C. § 103 as being unpatentable over Furuya et al. in view of Terada et al.

Furuya teaches the invention (claims 30, 36, 42, 46 and 50) substantially as claimed including a memory system comprising:

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(a) cache memory for temporarily storing data files intended for non-volatile storage (e.g., see col. 5, lines 7-9);

(b) means to write data files to the cache instead of the non-volatile storage (e.g., see col. 8, lines 23-31);

(c) means of identifying each data file in the cache memory is taught as a cache directory (e.g., see col. 5, lines 22-28);

(d) means for moving data files from the cache memory to the non-volatile storage according to a least recently used replacement algorithm (e.g., see col. 2, lines 23-32); and

(e) means for writing directly to the non-volatile storage when a write miss occurs in the cache (e.g., see col. 8, lines 56-59).

Furuya does not teach the non-volatile storage as an eeprom memory, however, Terada teaches using eeproms as non-volatile memory storage. It would have been obvious to one of ordinary skill in the art of memory storage at the time the invention was made to use eeproms as the non-volatile memory of Furuya because the eeprom memory system of Terada allows the added protection and security for data stored in non-volatile memory as well as improved access time thereby improving the overall performance of a system using non-volatile memory.

As to claims 31, 37, 43 and 51, Furuya teaches the non-volatile memory being used as back-up memory for the cache and as being responsive to impending power loss to save data files which

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would be lost in volatile memory (e.g., see col. 2, lines 53 et seq.).

As to claims 32, 38, 44 and 52, Terada teaches the backup memory can be a flash eeprom memory system (e.g., see col. 2, lines 60-62). It would have been obvious to one of ordinary skill in the art of memory storage at the time the invention was made to use eeproms as the non-volatile memory of Furuya because the eeprom memory system of Terada allows the added protection and security for data stored in non-volatile memory as well as improved access time thereby improving the overall performance of a system using non-volatile memory.

As to claims 33, 39, 47 and 53, Furuya teaches the cache memory is faster than the non-volatile memory (e.g., see col. 1, lines 27-32).

As to claims 34, 40, 48 and 54, Furuya teaches a control circuit for controlling the operations of the cache and the non-volatile memory (e.g., see col. 1, lines 48-57).

As to claims 35, 41, 49 and 55, Furuya teaches the cache is part of a random access memory system (e.g., see col. 1, lines 13-21).

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hoffman teaches a dynamic ram with non-volatile back-up storage and method of operation.

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Kroll et al. teaches a nonvolatile memory protection arrangement for electronic postage meter systems having plural nonvolatile memories.

Nakamura et al. teaches a semiconductor integrated circuit with nonvolatile memory.


Tayler et al. teaches sequentially processing data in a cache data storage system.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Reba I. Elmore whose telephone number is (703) 308-1619.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0754.


Reba I. Elmore

2October 30, 1991


JOSEPH A. POPEK
PRIMARY EXAMINER
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